

MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
FORD MOTOR COMPANY - WIXOM ASSEMBLY
All Outfalls No. 630005
NPDES Permit No. MI0028151
Oakland County
Wixom, Michigan
September 9-10, 1980

WQ 177878

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, September 9, 1980.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0028151. The survey results are compared to the permit requirements and the results reported by the company on their Monthly Operating Report in Table 3.

Composite samples taken at outfalls 001, 002 and 004 were split with the company for comparison of analytical results. The results compare well. This comparison is in Table 4.

The results from this survey are compared to the results of the previous survey in Table 5. Suspended and dissolved solids and chlorides at outfalls 002 and 004 were substantially less than at the time of the last survey. No PCB's were found at any of the outfalls during this survey.

Survey Comments

Samples were taken at the inlet and outlet to the biodisks in order to check their performance. Using the survey results, the biodisks reduced BOD₅ by 94%, COD by 78%, suspended solids by 64% and total phosphorus by 42%. All the results are in Table 1.

This survey was done in conjunction with Comprehensive Studies Section's intensive river survey at Norton Creek.

Plant Processes

The Ford Motor Company, Wixom Plant assembles and paints Thunderbird and Lincoln model automobiles. Production was slow during the survey due to a sales slowdown. Normal production at this plant is considered to be 36 units per hour with an employment of 4700 people.

Water Supply, Wastewater & Treatment

The Ford Motor Company, Wixom Plant, receives its' water supply from four company operated wells. Water used in the plant's humidifier filter unit and refrigeration heat exchangers is softened using ion exchange.

Some cooling water, runoff from the coal pile area, railroad track runoff, process wastewater from the bonderizer line, water softener backwash, continuous boiler blowdown overflow from the paint spray sludge tanks, effluent from the continuous chromium reduction facility, body washers, car washers, water test pit and plant executive car wash are treated by the wastewater treatment system. A flow diagram of the treatment system can be seen in Figure 1.

The wastewater treatment system consists of 2 batch treatment tanks for pH adjustment and metals precipitation, 3 parallel settling lagoons, 2 equalization basins, a biodisc system for BOD removal, 2 secondary clarifiers, gravity sand filters and a final 16 acre aerated lagoon. Treated effluent may be discharged to Norton Creek from the aerated lagoon via outfall 630082 (001) or the final lagoon may be bypassed and discharged from outfall 001A.

The plant's two 60,000 gallon batch treatment tanks alternately receive the process wastewater from the plant. Ferric chloride, a polymer and sodium hydroxide are used for adjusting the pH of the wastewater to greater than 8.0 and to aid settling. The batch tank discharges to the settling ponds where it mixes with a cooling water stream. The effluent from the settling basins is pumped to the smaller equalization basins and then is pumped to the plant's biodisc system for BOD removal. The biodisc effluent flows to a secondary clarifier and then to a gravity sand filter. After filtration the wastewater is either discharged via outfall 001A or is pumped to the plant's 16 acre aerated lagoon and discharged via outfall 001. Sludge from the secondary clarifiers is treated by anaerobic digestion and dried. Gravity filter backwash is returned to the settling lagoons.

Outfall 830083 (002) discharges cooling water from the heat exchangers, and roof and parking lot storm water runoff. Approximately 70% of the water discharged through 002 during a year is from storm water runoff.

Outfall 630112 (004) discharges roof and yard drainage.

The wastewater discharged out outfalls 002 and 004 is not treated before being discharged to Norton Creek.

Sanitary wastewater from the plant is discharged to the City of Wixom's sanitary system.